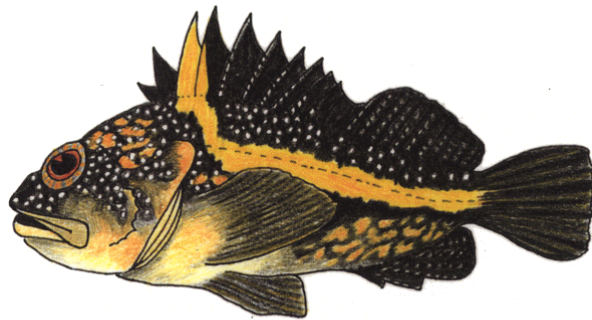


China Rockfish, *Sebastes nebulosus*

1993-1999 Commercial Catch by Ports & Blocks



Marine Fishery Profiles

Volume 1: Nearshore

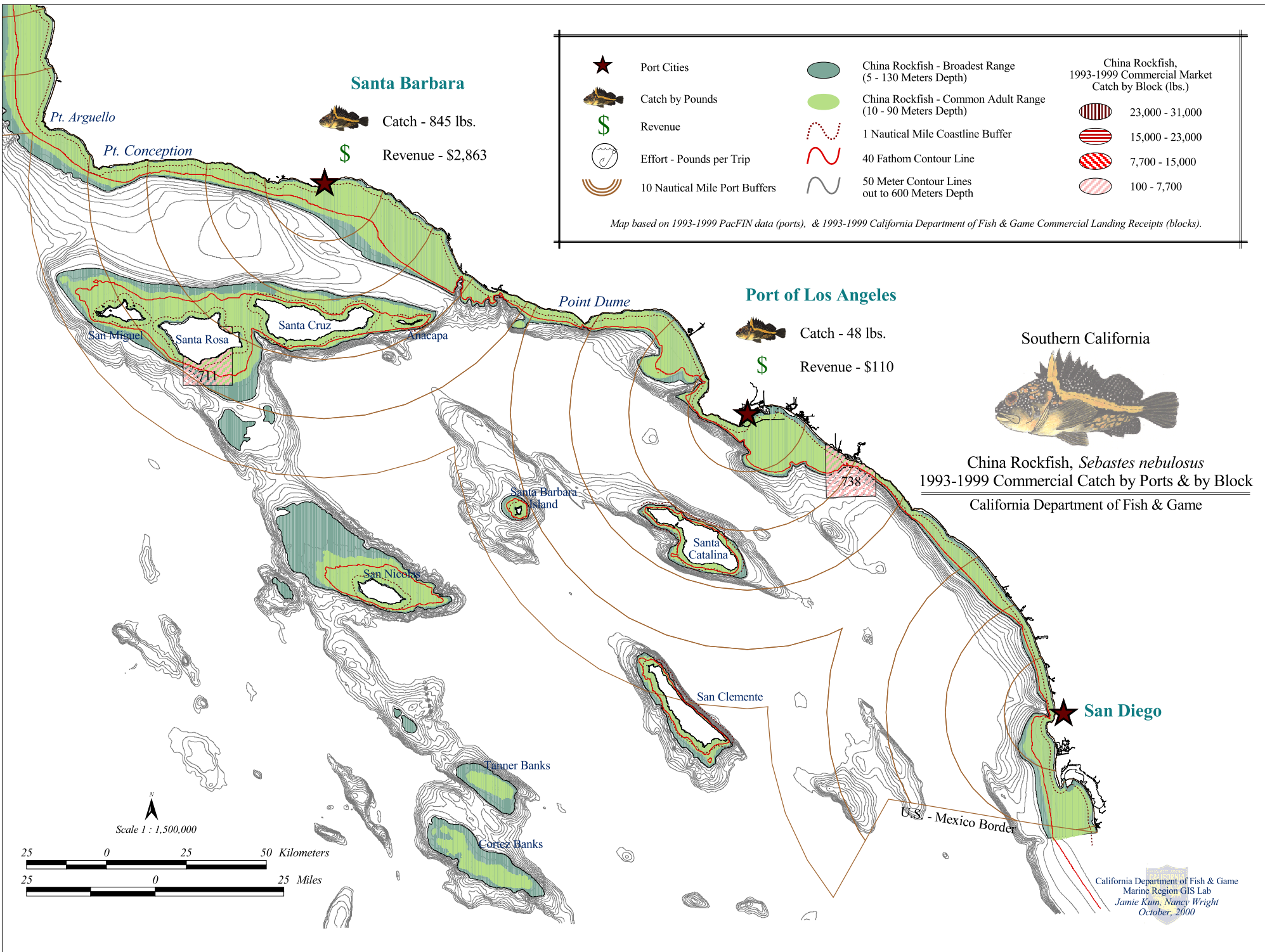
Marine Region GIS Lab

Nancy Wright	Eric Knaggs
Jamie Kum	Bob Leos
Chad King	Colleena Perez



California Department of Fish & Game
Marine Region

December 2000



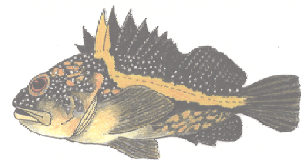
Santa Cruz

Monterey

Catch - 24,349 lbs.

Revenue - \$39,866

Southern Central California



China Rockfish, *Sebastes nebulosus*
1993-1999 Commercial Catch by Ports & by Block
California Department of Fish & Game

Point Sur

Lopez Point

Point
Piedras Blancas

Morro Bay

Catch - 18,114 lbs.

Revenue - \$36,999

Point Sal

Pt. Arguello

Pt. Conception

Santa Cruz

Santa Rosa

San Miguel



Port Cities



Catch by Pounds



Revenue



Effort - Pounds per Trip



10 Nautical Mile Port Buffers



50 Meter Contour Lines
out to 600 Meters Depth



China Rockfish - Broadest Range
(5 - 130 Meters Depth)



China Rockfish - Common Adult Range
(10 - 80 Meters Depth)



1 Nautical Mile Coastline Buffer



40 Fathom Contour Line

China Rockfish,
1993-1999 Commercial Market
Catch by Block (lbs.)



23,000 - 31,000



15,000 - 23,000



7,700 - 15,000



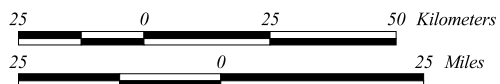
100 - 7,700

Map based on 1993-1999 PacFIN data (ports),
& 1993-1999 Commercial Landing Receipts (blocks).

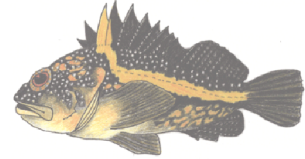
California Department of Fish & Game
Marine Region GIS Lab
Jamie Kim, Nancy Wright
October, 2000



Scale 1 : 1,500,000



Northern Central California



China Rockfish, *Sebastes nebulosus*
1993-1999 Commercial Catch by Ports & by Block
California Department of Fish & Game

Bodega Bay

Catch - 52,057 lbs.

Revenue - \$86,348

San Francisco

Catch - 105,639 lbs.

Revenue - \$174,229

Half Moon Bay

Santa Cruz

Monterey

Catch - 24,349 lbs.

Revenue - \$39,866

Point Sur

Lopez Point

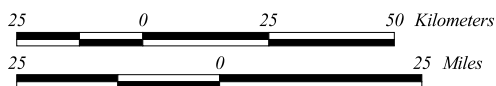
Point Piedras Blancas

- ★ Port Cities
 - Catch by Pounds
 - \$ Revenue
 - Effort - Pounds per Trip
 - 10 Nautical Mile Port Buffers
 - 50 Meter Contour Lines out to 600 Meters Depth
 - China Rockfish- Broadest Range (5 - 130 Meters Depth)
 - China Rockfish - Common Adult Range (10 - 80 Meters Depth)
 - 1 Nautical Mile Coastline Buffer
 - 40 Fathom Contour Line
- China Rockfish,
1993-1999 Commercial Market
Catch by Block (lbs.)
- 23,000 - 31,000
 - 15,000 - 23,000
 - 7,700 - 15,000
 - 100 - 7,700

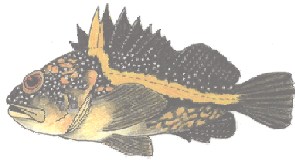
Map based on 1993-1999 PacFIN data (ports),
& 1993-1999 Commercial Landing Receipts (blocks).

California Department of Fish & Game
Marine Region GIS Lab
Jamie Kum, Nancy Wright
October, 2000

Scale 1 : 1,500,000



Northern California



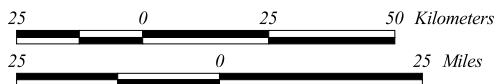
China Rockfish, *Sebastes nebulosus* 1993-1999 Commercial Catch by Ports & by Block California Department of Fish & Game

- ★ Port Cities
 - Catch by Pounds
 - \$ Revenue
 - Effort - Pounds per Trip
 - 10 Nautical Mile Port Buffers
 - 50 Meter Contour Lines out to 600 Meters Depth
 - China Rockfish- Broadest Range (5 - 130 Meters Depth)
 - China Rockfish - Common Adult Range (10 - 80 Meters Depth)
 - 1 Nautical Mile Coastline Buffer
 - 40 Fathom Contour Line
- China Rockfish,
1993-1999 Commercial Market
Catch by Block (lbs.)
- 23,000 - 31,000
 - 15,000 - 23,000
 - 7,700 - 15,000
 - 100 - 7,700

Map based on 1993-1999 PacFIN data (ports),
& 1993-1999 Commercial Landing Receipts (blocks).

California Department of Fish & Game
Marine Region GIS Lab
Jamie Kum, Nancy Wright
October, 2000

Scale 1 : 1,500,000



Crescent City



Catch - 28,429 lbs.



Revenue - \$56,086

Eureka



Catch - 13,557 lbs.



Revenue - \$20,997

Fort Bragg



Catch - 45,062 lbs.



Revenue - \$119,814

Figure 1. (refer to table 1) CDFG Commercial Receipts Data (1993 - 1999)
Total Pounds of China Rockfish Caught and Average Price per Pound by Month

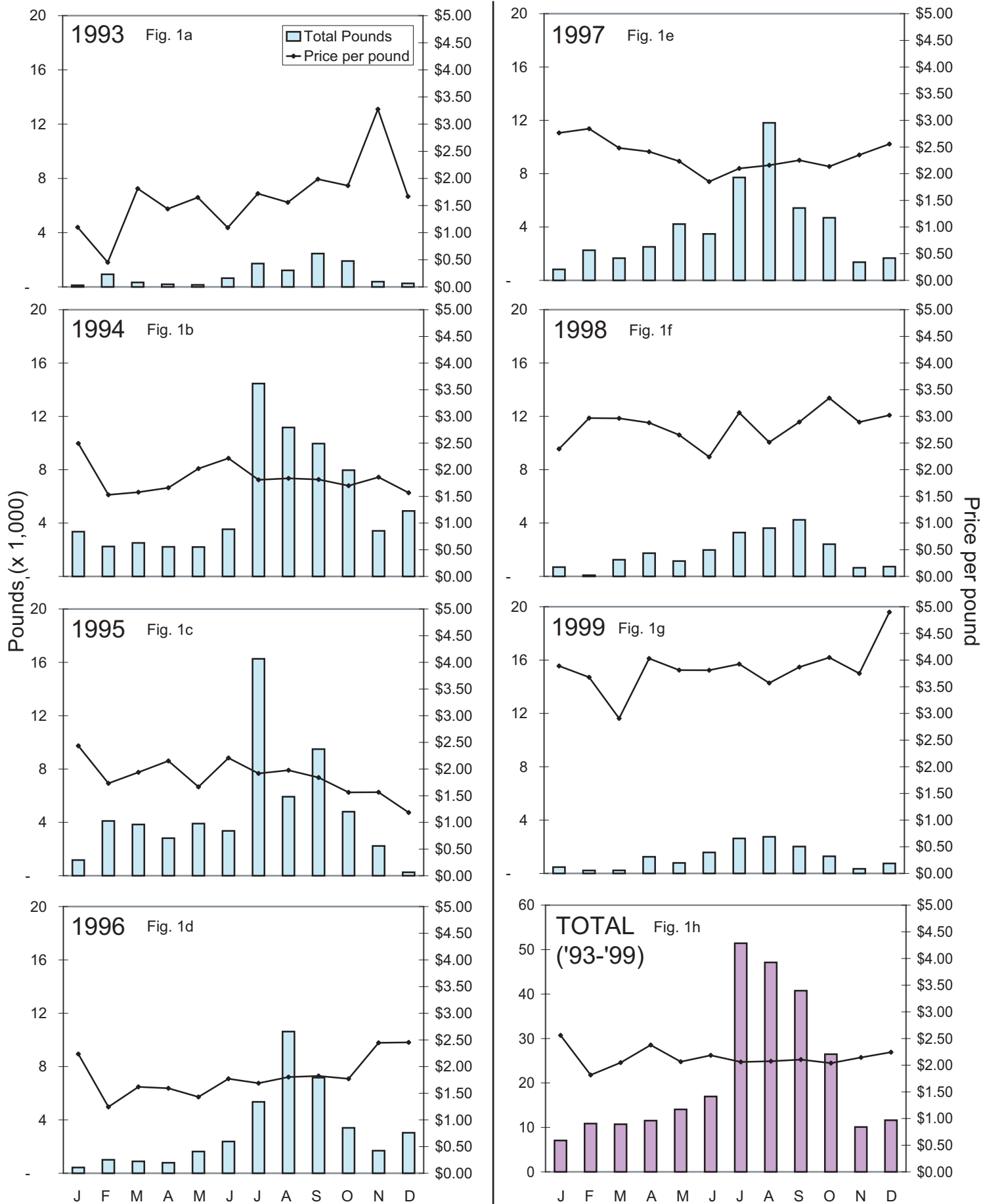


Table 1. (refer to fig. 1) CDFG Commercial Receipts Data (1993 - 1999)
Total Pounds of China Rockfish Caught and Average Price per Pound by Month

1993
Table 1a

Month	Total Pounds	Price per Pound
Jan	119	\$1.10
Feb	928	\$0.45
Mar	335	\$1.81
Apr	196	\$1.44
May	150	\$1.65
Jun	646	\$1.09
Jul	1,719	\$1.72
Aug	1,223	\$1.56
Sep	2,457	\$1.99
Oct	1,907	\$1.87
Nov	387	\$3.28
Dec	258	\$1.67
Total	10,324	\$1.68

1997
Table 1e

Month	Total Pounds	Price per Pound
Jan	824	\$2.77
Feb	2,261	\$2.84
Mar	1,665	\$2.48
Apr	2,511	\$2.41
May	4,219	\$2.23
Jun	3,486	\$1.85
Jul	7,717	\$2.10
Aug	11,818	\$2.16
Sep	5,425	\$2.25
Oct	4,692	\$2.14
Nov	1,366	\$2.35
Dec	1,674	\$2.56
Total	47,657	\$2.23

1994
Table 1b

Month	Total Pounds	Price per Pound
Jan	3,354	\$2.49
Feb	2,242	\$1.53
Mar	2,513	\$1.58
Apr	2,221	\$1.66
May	2,206	\$2.02
Jun	3,540	\$2.22
Jul	14,462	\$1.81
Aug	11,171	\$1.84
Sep	9,963	\$1.82
Oct	7,967	\$1.70
Nov	3,416	\$1.86
Dec	4,910	\$1.57
Total	67,963	\$1.83

1998
Table 1f

Month	Total Pounds	Price per Pound
Jan	696	\$2.39
Feb	86	\$2.97
Mar	1,246	\$2.96
Apr	1,740	\$2.88
May	1,151	\$2.65
Jun	1,980	\$2.24
Jul	3,289	\$3.07
Aug	3,618	\$2.51
Sep	4,239	\$2.89
Oct	2,416	\$3.34
Nov	645	\$2.89
Dec	730	\$3.02
Total	21,837	\$2.83

1995
Table 1c

Month	Total Pounds	Price per Pound
Jan	1,172	\$2.43
Feb	4,106	\$1.73
Mar	3,840	\$1.94
Apr	2,813	\$2.15
May	3,909	\$1.67
Jun	3,359	\$2.21
Jul	16,265	\$1.92
Aug	5,920	\$1.98
Sep	9,493	\$1.84
Oct	4,796	\$1.56
Nov	2,228	\$1.57
Dec	255	\$1.18
Total	58,156	\$1.87

1999
Table 1g

Month	Total Pounds	Price per Pound
Jan	471	\$3.89
Feb	220	\$3.68
Mar	227	\$2.91
Apr	1,248	\$4.03
May	787	\$3.81
Jun	1,575	\$3.81
Jul	2,626	\$3.93
Aug	2,748	\$3.57
Sep	2,016	\$3.87
Oct	1,287	\$4.05
Nov	345	\$3.75
Dec	750	\$4.90
Total	14,300	\$3.88

1996
Table 1d

Month	Total Pounds	Price per Pound
Jan	428	\$2.24
Feb	1,011	\$1.24
Mar	889	\$1.62
Apr	789	\$1.59
May	1,626	\$1.43
Jun	2,376	\$1.77
Jul	5,354	\$1.69
Aug	10,621	\$1.80
Sep	7,168	\$1.82
Oct	3,403	\$1.77
Nov	1,688	\$2.45
Dec	3,037	\$2.45
Total	38,388	\$1.83

TOTAL
'93 - '99
Table 1h

Month	Total Pounds	Price per Pound
Jan	7,063	\$2.56
Feb	10,853	\$1.82
Mar	10,715	\$2.05
Apr	11,517	\$2.38
May	14,049	\$2.07
Jun	16,962	\$2.18
Jul	51,433	\$2.06
Aug	47,118	\$2.07
Sep	40,760	\$2.11
Oct	26,468	\$2.04
Nov	10,075	\$2.14
Dec	11,614	\$2.24
Total	258,626	\$2.10

Figure 2. (refer to table 2) Pacific Fisheries Information Network Data (1993 - 1999)
Total Pounds of China Rockfish Caught and Average Price per Pound by Month

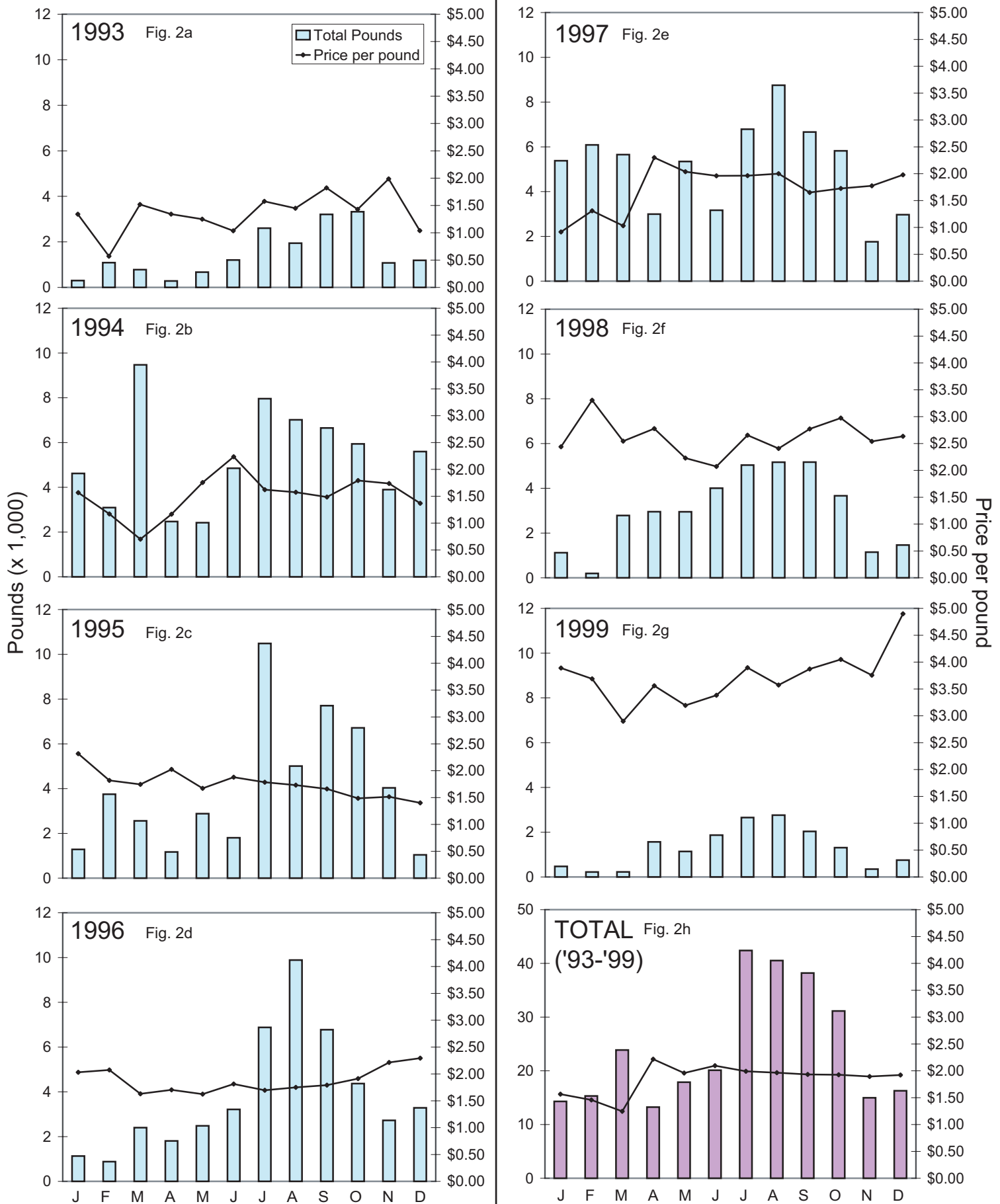


Table 2. (refer to fig. 2) Pacific Coast Fisheries Information Network Data (1993 - 1999)
Total Pounds of China Rockfish Caught and Average Price per Pound by Month

1993
Table 2a

Month	Total Pounds	Price per Pound
Jan	300	\$1.34
Feb	1,086	\$0.57
Mar	781	\$1.52
Apr	284	\$1.34
May	671	\$1.25
Jun	1,204	\$1.04
Jul	2,603	\$1.57
Aug	1,941	\$1.45
Sep	3,208	\$1.82
Oct	3,324	\$1.43
Nov	1,077	\$1.99
Dec	1,187	\$1.04
Total	17,666	\$1.45

1997
Table 2e

Month	Total Pounds	Price per Pound
Jan	5,378	\$0.91
Feb	6,086	\$1.31
Mar	5,652	\$1.03
Apr	2,992	\$2.30
May	5,347	\$2.04
Jun	3,167	\$1.96
Jul	6,787	\$1.96
Aug	8,753	\$2.00
Sep	6,661	\$1.65
Oct	5,820	\$1.73
Nov	1,757	\$1.77
Dec	2,968	\$1.98
Total	61,368	\$1.69

1994
Table 2b

Month	Total Pounds	Price per Pound
Jan	4,619	\$1.57
Feb	3,092	\$1.17
Mar	9,471	\$0.70
Apr	2,469	\$1.17
May	2,417	\$1.76
Jun	4,853	\$2.24
Jul	7,958	\$1.62
Aug	7,015	\$1.57
Sep	6,652	\$1.48
Oct	5,940	\$1.79
Nov	3,895	\$1.74
Dec	5,597	\$1.37
Total	63,978	\$1.47

1998
Table 2f

Month	Total Pounds	Price per Pound
Jan	1,119	\$2.44
Feb	196	\$3.31
Mar	2,782	\$2.54
Apr	2,954	\$2.78
May	2,951	\$2.23
Jun	4,005	\$2.07
Jul	5,037	\$2.65
Aug	5,164	\$2.41
Sep	5,168	\$2.77
Oct	3,663	\$2.97
Nov	1,148	\$2.54
Dec	1,462	\$2.63
Total	35,649	\$2.56

1995
Table 2c

Month	Total Pounds	Price per Pound
Jan	1,282	\$2.32
Feb	3,751	\$1.82
Mar	2,558	\$1.74
Apr	1,168	\$2.02
May	2,881	\$1.67
Jun	1,802	\$1.88
Jul	10,485	\$1.79
Aug	5,005	\$1.73
Sep	7,705	\$1.66
Oct	6,714	\$1.48
Nov	4,033	\$1.51
Dec	1,038	\$1.40
Total	48,422	\$1.70

1999
Table 2g

Month	Total Pounds	Price per Pound
Jan	472	\$3.89
Feb	221	\$3.69
Mar	226	\$2.90
Apr	1,565	\$3.56
May	1,138	\$3.19
Jun	1,868	\$3.38
Jul	2,654	\$3.90
Aug	2,763	\$3.57
Sep	2,035	\$3.87
Oct	1,308	\$4.05
Nov	349	\$3.76
Dec	753	\$4.90
Total	15,352	\$3.73

1996
Table 2d

Month	Total Pounds	Price per Pound
Jan	1,133	\$2.03
Feb	881	\$2.07
Mar	2,399	\$1.63
Apr	1,808	\$1.70
May	2,480	\$1.62
Jun	3,213	\$1.81
Jul	6,878	\$1.70
Aug	9,887	\$1.75
Sep	6,777	\$1.79
Oct	4,369	\$1.91
Nov	2,723	\$2.21
Dec	3,283	\$2.29
Total	45,831	\$1.83

TOTAL
'93 - '99
Table 2h

Month	Total Pounds	Price per Pound
Jan	14,303	\$1.57
Feb	15,313	\$1.46
Mar	23,869	\$1.25
Apr	13,240	\$2.22
May	17,885	\$1.96
Jun	20,112	\$2.09
Jul	42,402	\$1.99
Aug	40,528	\$1.96
Sep	38,206	\$1.93
Oct	31,138	\$1.93
Nov	14,982	\$1.89
Dec	16,288	\$1.92
Total	288,266	\$1.87

Abbreviated Life History of the China Rockfish (*Sebastes nebulosus*)

The China rockfish is an attractive rockfish, almost entirely black except for a yellow, or yellow-white stripe that runs from the anterior portion of the dorsal fin, along the lateral line, to the tail.

Distribution, Stock Structure and Migration

China rockfish occur from Kachemak Bay, northern Gulf of Alaska to Redondo Beach and San Miguel Island in southern California, but they are most abundant from southeastern Alaska to Sonoma County, California. They are found at depths up to 420 ft, but are most common between 30 and 300 ft. The juveniles are pelagic but the adults are sedentary, associated with rocky reefs or cobble. They are residential, traveling less than a meter from their home range, and generally found resting on the bottom or hiding in crevices.

Age and Growth

China rockfish have been aged to a maximum age of 26 yr. Based on a calculated age-length relationship, a 10-in. TL China rockfish is approximately 6-7 yr old and a 12-in. TL fish is approximately 9-10 yr old. A maximum length of 17.9 in. has been recorded for this species.

Reproduction, Fecundity and Seasonality

Off central and northern California, male China rockfish reach reproductive maturity at a total length of 10.2 in. TL and 3 yr of age, while the females reach maturity at 11.0 in. TL and 4 yr of age. Fifty percent of the population of males and females will reach first maturity at 10.6 in. TL and 4 yr of age, and 11.0 in. TL and at 4 yr of age, respectively.

Spawning occurs off central and northern California between January and July, with peak spawning in January. Individual China rockfish spawn once a year. Larvae settle out of the plankton between 1 to 2 months after release.

Natural Mortality

Estimates for natural mortality were not available for China rockfish.

Diseases

No information is available on diseases in China rockfish.

Predator/Prey Relationships

Like grass and kelp rockfish larvae, China rockfish larvae are planktivores. Juveniles eat crustaceans, while the adults eat crustaceans as well as ophiuroids, mollusks, and fish.

Juveniles are prey of birds, porpoises, and fishes, including rockfishes, lingcod, cabezon, and salmon. Predators of adult China rockfish include sharks, dolphins, seals, lingcod, and possibly river otters.

Competition

China rockfish are likely to compete with other demersal species like kelp greenling, cabezon, lingcod, and other rockfishes such as grass, quillback, copper, and vermillion, all of which also inhabit rocky areas.

Critical Habitat

Larvae and early juveniles are pelagic but larger juveniles and adults settle on rocky reefs or cobble substrate, most commonly in depths between 30 and 300 ft. Once they settle, individuals may stay on the same reef for years.

Status of Stocks

No formal stock assessment has been completed for this species.